Product Highlights

Performance

- 7160-32CQ: 32x 100GbE
- 7160-48YC6: 48x 25GbE and 6x 100GbE
- 7160-48TC6: 48x 10GBASE-T and 6x 100GbE
- Up to 32 wire-speed 100GbE ports
- Up to 6.4 terabits per second
- Up to 2.4 billion packets per second
- Wire speed L2 and L3 forwarding

Data Center Optimized Design

- Fully shared 24MB packet buffer
- Programmable pipeline for application specific encapsulation
- Adaptable forwarding tables with custom profiles
- Over 94% efficient power supplies
- 1+1 redundant & hot-swappable power
- N+1 redundant & hot-swappable fans
- Front-to-rear or rear-to-front cooling
- Tool less rails for simple installation

Virtualization and Provisioning

- CloudVision
- VXLAN Routing for next generation DC
- LANZ for burst and flow monitoring
- VM Tracer
- Zero Touch Provisioning (ZTP)
- Advanced Event Monitoring
- sFlow (RFC3176)
- Hierarchical time-stamping and PTP

Cloud Networking Ready

- Arista AlgoMatch™
- 128K MAC Addresses
- 64K IPv4 and 32K IPv6 Host Routes
- Over 500K IPv4 Routes
- Up to 48K Access list entries

Resilient Control Plane

- High Performance x86 CPU
- 8GB DRAM
- 4GB Flash
- User applications can run in a VM

Arista Extensible Operating System

- Single binary image
- Fine-grained truly modular network OS
- Stateful Fault Containment (SFC)
- Stateful Fault Repair (SFR)
- Full access to Linux shell and tools
- Extensible platform - bash, python, C++ , GO, OpenConfig

Overview

The Arista 7160 Series are key components of the Arista 7000 Series portfolio of data center switches. Highly dynamic cloud data center networks continue to evolve with the introduction of new protocols and server technologies such as containers bringing with them ever increasing bandwidth demands, accelerating the need for dense 25 and 100 Gigabit Ethernet switching in both leaf and spine tiers of modern networks. The Arista 7160 Series are purpose built fixed configuration 10/25GbE and 100GbE systems built for the highest performance environments, and to meet the needs of the largest scale data centers. They combine scalable L2 and L3 resources and high density with a highly programmable and customizable switch architecture. Simple software updates allow reconfiguration of packet parsing, lookups, traffic scheduling, packet modification and traffic monitoring without re-engineering of the switch.

The 7160 can be deployed in a range of open networking solutions including large scale layer 2 and layer 3 cloud designs, overlay networks, virtualized or traditional enterprise data center networks.

The 7160 Series are available in a range of models with a choice of 10GBASE-T and 25GbE SFP with 40/100GbE QSFP uplinks and a 40/100GbE system that offers up to 32 ports of wire speed 100GbE in a 1RU system. The wide range of interfaces and density choice provides deployment flexibility.

25GbE interfaces with SFP and 100GbE with QSFP on the 7160 Series enables flexible choices of port speed providing unparalleled flexibility and the ability to seamlessly transition data centers to the next generation of Ethernet performance. The 7160 Series provide industry leading power efficiency with airflow choices for back to front, or front to back. Combined with Arista EOS the 7160 Series delivers advanced features for cloud, big data, virtualized and traditional designs.
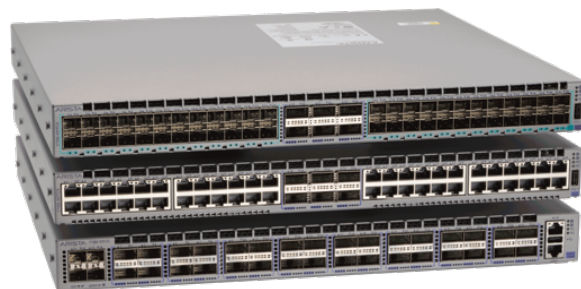
Arista 7160 Series of Data Center Switches

Arista EOS

All Arista products including the 7160 Series runs the same Arista EOS software, binary image simplifying network administration with a single standard across all switches. Arista EOS is a modular switch operating system with a unique state sharing architecture that cleanly separates switch state from protocol processing and application logic. Built on top of a standard Linux kernel, all EOS processes run in their own protected memory space and exchange state through an in-memory database. This multi-process state sharing architecture provides the foundation for in-service-software updates and self-healing resiliency together with stateful switchover without the loss of data plane forwarding.

Arista EOS enables advanced monitoring and automation capabilities such as Zero Touch Provisioning, LANZ, VM Tracer and Linux based tools to be run natively on the switch.

Software Defined Cloud Networks

Arista Software Defined Cloud Networking (SDCN), combines the principles that have made cloud computing the unstoppable force that it is: automation, self service provisioning, and linear scaling of both performance and economics coupled with the trend in Software Defined Networking that delivers: network virtualization, custom programmability, simplified architectures, and lower capital expenditure. This combination creates a best-in-class software foundation for maximizing the value of the network to both the enterprise and service provider data center. A new architecture for the most mission-critical location within the IT infrastructure that simplifies management and provisioning, speeds up service delivery, lowers costs and creates opportunities for competitive differentiation, while putting control and visibility back in the hands of the network and systems administrators.

The Four Pillars of Arista's Software Defined Cloud Networking:

Universal Cloud Network
- Scalable standards-based MLAG at Layer 2, ECMP for Layer 3 and VXLAN for network virtualization flexibility
- Non blocking leaf-spine for 10K-100K hosts

Cloud Control
- Standards based EOS with AEM, ZTP/ZTR, LANZ and DANZ
- Automated Monitoring for visibility and telemetry

Network Wide Virtualization
- Multi-vendor API Support with eAPI
- Support for VMWare and NSX with VXLAN and VMTracer
- Support for Microsoft OMI and Openstack OVSDB

Network Applications and Automated Management
- Single point of network-wide state with Arista CloudVision
- Networked applications for workload mobility, smart systems rollback and upgrades and workflow telemetry
- Open Partner integration

Scaling Data Center Performance

The Arista 7160 Series deliver switching capacity that enables dramatically faster and simpler network designs for data centers and lowers both capital and operational expenses. The Arista 7000 Series of fixed and modular systems with a single consistent EOS allows for flexible selections at all tiers of the network and deployment scenarios including layer 2 MLAG, layer 3 ECMP, VXLAN Overlay, and Internet route scale.

Arista's **Multi-Chassis Link Aggregation** (MLAG) technology supports a leaf and spine active/active L2 network topology. An **Equal Cost Multi-Path (ECMP)** design at Layer 3 scales the network in a fully non-blocking, low-latency, two-stage network that provides predictable and consistent application performance. The flexibility of the L2 and L3 multi-path design options combined with support for open standards provides maximum flexibility, scalability and network wide virtualization that scales to hundreds of thousands of hosts in a single two-tier design. Both designs support overlay networks via VXLAN and can integrate with standards-based overlay controller solutions.

AlgoMatch (TM)

AlgoMatch is a unique Arista innovation for modern cloud networks, combining both software and hardware to enable more flexible and scalable solutions for access control, policy based forwarding and network telemetry. By combining general purpose memory with with advanced software algorithms AlgoMatch delivers higher scale, performance and efficiency with lower power and is more cost effective than traditional solutions. AlgoMatch provides a more efficient packet matching algorithm that in turn enables flow matching for access control, policy and visibility. The net benefits are a high performance policy engine with both increased functionality and scale in a cost and power efficient solution.

- AlgoMatch enables IPv4 and IPv6 access control at the same scale
- L4 rule ranges are programmed efficiently without expansion or reduced capacity
- Multiple actions can be performed on a single packet or flow
- User defined filters allow flexible packet classification based on offsets for custom actions
- Supports rich policy with consistent semantics that would exhaust classical resources

Enhanced Features for High Performance Cloud Networks

The Arista 7160 delivers a suite of advanced traffic control and monitoring features to improve the agility of modern high performance environments, with solutions for automation, data monitoring, precise timing and next-generation virtualization.

Automating the data center enables customers to dynamically provision computing resources in the most efficient manner while also meeting business needs by maintaining service level agreements (SLAs). Arista EOS automates complex IT workflows and simplifies network operations while reducing or even eliminating downtime. Arista EOS rich automation capabilities not only reduce the human error element in network operations but also enable IT operators to make the network work the way they want.

Arista offers solutions for a variety of approaches to cloud-like network automation. Addressing the needs of the largest public cloud environments as well as applying those lessons learned in the turnkey CloudVision automation offering.

CloudVision

CloudVision is a network-wide approach for workload orchestration and workflow automation as a turnkey solution for Cloud Networking. CloudVision extends the EOS publish subscribe architectural approach across the network for state, topology, monitoring and visibility. This enables enterprises to move to cloud-class automation without needing any significant internal development.

Arista Event Management (AEM)

Advanced Event Management (AEM), a sub-system of Arista EOS, is a powerful and flexible tool to automate tasks and customize the behavior of EOS and the operation of the overall data center switching infrastructure. Simplifying the overall operations, AEM provides the tools to customize alerts and actions. AEM allows operators to fully utilize the intelligence within EOS to respond to real-time events, automate routine tasks, and automate actions based on changing network conditions.

Flexible Profiles

Network scalability is directly impacted by a switches forwarding tables. The 7160 Series provide flexibility on how memory resources are allocated among the different tables and features. A Forwarding Profile is a pre-defined allocation of the forwarding table resources to assign specific table sizes.. Forwarding profiles allows the available resources to be optimally allocated for specific features or set of features for a given use case. This allows for deployment of the 7160 Series across multiple use cases each configured with a different forwarding profile to suit the unique requirements.

Programmable Pipeline

The 7160 programmable packet pipeline allows the addition of new protocols, encapsulation and tunneling features to the packet processor through simple software upgrades without changes to the underlying hardware. This allows for rapid testing and deployment avoiding costly replacements or major upgrades. A recent example of a new encapsulation in the data center environment is VXLAN which required new silicon technology, delaying customer deployments and innovation.

Virtualization

Supporting next-generation virtualized data centers requires tight integration with orchestration tools and emerging encapsulation technologies such as VXLAN. The 7160 builds on the valuable tools already provided by the Arista VM Tracer suite to integrate directly into encapsulated environments. Offering a wire-speed gateway between VXLAN and traditional L2/3 environments, the 7160 makes integration of non-VXLAN aware devices including servers, firewalls and load-balancers seamless and provides the ability to leverage VXLAN as a standards based L2 extension technology for non-MPLS environments.

Maximum Network Design Flexibility

- Scalable designs with up to a 128-way ECMP provides flexibility and balances traffic evenly across the largest leaf-spine designs
- MLAG designs are effective at almost any layer of the network and maximize cross-sectional bandwidth with fast failover times measured in 100's of milliseconds for link failures.
- VXLAN gateway, bridging and routing with VMTracer features to enable next generation data center designs
- Wide choice of interfaces with broad support for flexible 10GbE, 25GbE or 50GbE modes.
- Support for standards based IEEE 25GbE with mix and match support for both 10G and 25G for simple and cost effective migration
- AlgoMatch to match business intent to network policy for flow matching, access control and telemetry
- Flexible forwarding profiles for optimal allocation of L2 and L3 forwarding table resources in multiple use cases
- EOS tools for network wide visibility and monitoring to detect traffic bursts, monitor latency and congestion and allow capacity planning to improve application performance and availability

System Overview

The 7160 Series deliver unprecedented levels of programmability, flexible forwarding profiles, and a fully shared packet buffer in a choice of high density interfaces as shown below to seamlessly evolve to the next generation of Ethernet speeds.

7160-48TC6: 48 port 10GbE BASE-T and 6 port 100G QSFP
- Easy migration from 1000Mb to 1G/10G using a familiar RJ45 connection
- Six 100G QSFP ports allow choice of 6x 100GbE, 24x 25GbE, 6x 40GbE, or 24x 10GbE
- 5 speeds for flexible 10GbE, 25GbE, 40GbE, 50GbE and 100GbE with optics or cables
- 2.16Tbps of wire speed performance with 24MB of buffer
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7160-48YC6: 48 port 25G SFP and 6 port 100G QSFP
- Offer 48 wirespeed 10/25G ports with 6 100G ports for up to 72 total 25G or 10G ports
- Easy migration from 1/10G to 1/10/25G using a familiar SFP connection
- Six 100G QSFP ports allow choice of 6x 100GbE, 24x 25GbE, 6x 40GbE, or 24x 10GbE
- 5 speeds for flexible 10GbE, 25GbE, 40GbE, 50GbE and 100GbE with optics or cables
- 3.6Tbps of wire speed performance with 24MB of buffer

7160-32CQ: 32 port 100G QSFP
- Offers a choice of port combinations with 40G and 100G QSFP optics and cables
- Flexible interface combinations - 32x 100G/40G, 128x 25/10G, 64x 50G
- 100G QSFP ports for 5 speeds for flexible 10GbE, 25GbE, 40GbE, 50GbE and 100GbE
- 6.4Tbps of wire speed performance with 24MB of buffer

Arista 7160 Flexible Combinations

The Arista 7160 lowers total cost of ownership as they are designed to be efficient with power per port as low as 10W per 100GbE port which combined with front to rear cooling to optimize the data center environment produces the most reliable, dense and power efficient 100GbE fixed configuration switch.

7160 Advanced Traffic Manager and Fully Shared Buffer

The 7160 Series each incorporate an advanced traffic manager with 24MB of packet buffer that is fully shared across all ports. Unlike other architectures that have fixed per-port packet memory or buffers arranged in multiple slices the 7160 Series buffer is dynamically allocated across all ports with the ability to adjust in real time to the demands of bursty applications, mixed speeds and congestion. Extensive support for Active Queue Management mechanisms such as WRED, DCTCP and ECN ensure that high priority flows and lossless storage traffic are handled equally well with the ability to absorb large bursts with extensive counters for visibility and accounting.

7160 High Availability

The Arista 7160 switches were designed for continuous operations with system wide monitoring of both hardware and software components, simple serviceability and provisioning to prevent single points of failure. Key high availability features include:

• 1+1 hot-swappable power supplies and four hot-swap fans provide dynamic temperature control combined with N+1 redundancy
• Color coded PSU's and fans that deliver platinum level power efficiency
• Live software patching
• Self healing software with Stateful Fault Repair (SFR)
• Smart System Upgrade (SSU) and Accelerated Software Update (ASU) *

7160-32CQ Rear View: Rear to Front

7160-48YC6 and 7160-48TC6
Rear View: Front to Rear

Hot swap fan modules

Hot swap power supplies